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A TREATISE

—ON—

Malarial Fevers, for Domestic Use,

By J. M. LEWIS, M. D.

MEXIA, TEXAS.

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FOR

DOMESTIC USE

BY

J. M. LEWIS, M. D.

MEXIA, TEXAS.

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PREFACE.

This little book on Malarial Fevers is written in plain language, (avoiding all technical terms,) in order that the non-professional man may understand how to manage the common forms of fevers of the South.

I do not claim any originality in the ideas set forth, nor is there anything novel; but having had much experience in the treatment of malarial diseases, and knowing of no work exclusively on fevers, for domestic use, and moreover recognizing the fact that fully three-fourths of the sickness of this country is malarial, and easily managed when thoroughly understood,—for these and other reasons,—I propose to record all the essential facts in reference to Malaria and its influence on the human system, its cause, symptoms, treatment, and the best mode of prevention. Also describing the pulse, temperature, (use of thermometer,) respiration, etc., etc.

A chapter is devoted to the symptoms and treatment of convulsions of children, occurring during an attack of fever.

INTRODUCTORY.

I would not attempt to delude any one with the idea that they may become expert in the treatment of Malarial Fevers, or that I can make Physicians of all who may read this work; but will maintain that the facts herein taught are true; and have been demonstrated time and time again. And if you do not learn how to manage an ordinary case of Malarial Fever after reading and studying closely this little book, the fault will be with you.

To country people, who live many miles from a physician, this book will be valuable during the sickly season—July, August and September, in the South—as often they cannot obtain the services of a physician; then a correct knowledge of how, skillfully, to manage the sick, is invaluable. The life of the patient is in danger, and whatever is administered, should be done intelligently.

The nurse should have some idea of what the disease is, and what to accomplish by the remedies.

Many intelligent country people know well how to treat an ordinary case of Malarial Fever—observation has taught them, and they seldom call a physician for such a case.

In this book each type of the disease will be considered in a separate chapter. This is done for convenience. *First*, we can best study the disease in types, then as a whole.

Second, in cases of emergency, the reader can refer to any chapter at once.

This book is not written to injure, in any manner, my professional brethren, and I hope none will think that it is *unprofessional* in me to write it.

The fact is, we often visit patients when it is plain that if the family had properly understood the case, a life could have been saved, and the remedies administered should not have been given.

In such cases the thoughtful M. D. says nothing, avoids all comments, because he does not wish the family and friends to think, that by neglect or ignorance on their part, the patient died. This is more often the case in malarial sickness, than any other; for in some instances it assumes great violence; yet is generally controllable by proper treatment, if administered early.

That the views set forth in this book, are not in accord with those held by many physicians, I well know; especially is this true of the oft-used remedy, *calomel*. In condemning its use in the *acute* stage of Malarial Fevers, I feel confident, after many years experience, that I am correct, and that its use entails much suffering and debility; thereby prolonging convalescence. This is also the opinion of some of the best authorities on Malarial Fevers, as I will show further on.

In a book of this kind, I cannot argue this point at length, going into details as to its action, nor is it necessary; thinking it can be safely said that *the use of calomel in malarial sickness will soon be a thing of the past*, as is

bleeding and other spoilative treatment, which came into use when the disease was regarded as inflammatory, and only holds its place now on account of its *supposed* (?) action on the liver.

FEVER THERMOMETER.

To properly understand fevers, and to be accurate in noting its phases, it is necessary to use a fever thermometer.

There is no mystery in its use; it is simple and easily understood, and while one may understand the case, often, without it, yet with accuracy much better with its aid.

The day is not far distant when every family in the country will be supplied with a fever thermometer, and it is well they should, for it certainly is one of the most valuable auxiliaries we have for diagnosing disease.

I will try to explain fully, how to use the thermometer.

To the physician it is indispensable, and all well-informed doctors use them ; indeed, we cannot find an intelligent M. D. in the country without one in his pocket.

There are several kinds of these instruments in the market. All druggists and instrument makers keep them.

The best, or rather the one I prefer, is the small, straight, self-registering, in rubber case. This one is convenient to carry, and generally accurate.

Some thermometers are curved and some do not have the self-register. This latter (without a self-register) kind is not reliable, and one is likely to be deceived by it, for, in taking the thermometer from the arm-pit, (the part of the body to which it is usually applied,) it may fall a degree or

so before you notice it; especially is this true if the weather is cool.

The main point in purchasing a thermometer, is to be sure it is correct.

Always ask, if it has been tested. Should it be incorrect, of course, it would mislead you.

Have your physician or some one test it with one that has been used and known to be accurate.

Have no fear in commencing the use of the thermometer, that you will not understand it. You will soon recognize its great value and simplicity.

The normal (natural) temperature of the body is 98½°. The heat of the body varies to some extent in different persons, as it does in our own bodies, but from 98¼° to 98½° is the average normal temperature of the human body, in health.

Most of the thermometers have a "star" on them at 98½°, thus marking it as the normal temperature of the body.

In using a self-registering thermometer, always bring the mercury down to the "star" before inserting in the arm-pit. Jarring the thermometer, which is readily done by holding the same in the fingers and then striking the knee with the hand, (as you perhaps have seen physicians do.)

Be careful not to jar the mercury below the point 98½°, as it may descend into the bulb and become useless, for if the register ever passes into the bulb, the register is ruined.

When the register is at the correct place (98½°), insert the bulb (or mercury part) in the arm-pit (axilla), exercis-

ing care that the mercury part is well covered with flesh, (otherwise you may be taking the temperature of the clothing, and not the body), which can be done by placing the fore-arm across the breast.

After adjusting the thermometer well, let it remain at least five (5) minutes ; then note the height of the mercury in the column.

It is always best to write down the hour and the degree of fever; by doing this you can compare the fever one day with another.

This is all very easy and simple to execute, nevertheless very important.

RECAPITULATION.

1. Procure a good, reliable, self-registering thermometer.
2. See that the point of register is at 98½° (star), before inserting in the arm-pit.
3. Be sure that the bulb is well-covered with flesh.
4. Let the thermometer remain at least five minutes in the arm-pit.
5. Mark the hour taken and the height of the fever.

A little practice will soon make perfect in its use. I know many ladies, who understand the use of the thermometer well ; acquired the knowledge from attending one case of fever.

In attending the sick learn to be systematic and accurate; they must be administered to *correctly*, or not at all.

By keeping a correct register, noting the temperature every three or four hours, the nurse will soon observe when

the fever cools, and also the effect of the remedies given, etc.; can also compare the temperature of the body, one day with the next.

I do not think it well, every time, to inform the patient as to the amount of fever they may have, for in protracted cases they are liable to become discouraged. The patient can be informed, if they inquire as to how much fever they have, by an *evasive* answer, stating, your fever is about the same as a certain time yesterday, or, not so much as a few days since, or less, as the case may be. If the nurse finds the patient watching the course of their fever, it is well not to use the thermometer often. Always deal *truthfully* with a patient, but often their minds should be diverted from self, and kept as cheerful as possible.

PULSE.

Will now consider the pulse, for the pulse, temperature and respiration are the A B C's in the treatment of fevers.

The pulse is, as most people know, the radial artery, and can be felt with the finger, near the wrist.

COUNTING THE PULSE.

To count it accurately, open your watch, at the same time placing the index finger on the artery, then wait until the second hand of watch is opposite either of the figures 10, 20, 30, 40, 50, or 60, (which divides the minutes into six parts), then count the pulsations that take qlace before

the second hand reaches the next figure, multiplying these pulsations by six, and you have the number per minute. Some physicians hold the pulse and count for one minute; but this is often tiresome to the patient, and by all means do not worry one when sick. Consequently, I think the above plan the best.

Often it is best to place only one finger on the artery; for if you place two, the pulsations may confuse you. Do not press hard, just enough to get the impulse.

The average rate of pulse in health, is about (68) sixty-eight for the adult, though this varies much in different individuals, and with age and sex—faster in females than males.

Usually the pulse beat will increase about five to ten beats for each degree of fever. Case with normal pulse o sixty-eight (68), when attack with fever, and temperature of body 102°, pulse will usually be from 100 to 105. With temperature of 103, pulse will be from 108° to 113°, and so on, though this will vary greatly in each individual.

When in good health, the beating of pulse should be full and regular; *no intermissions*. If any intermissions (stopping), it is proof that the heart is involved.

Physicians are accustomed to describing the character of pulse, but in a work of this kind, perhaps it is best not to enter into details, as the subject is too scientific, and requires much study and investigation to properly understand.

Note on your paper the hour and rate of the pulsations,

as by this means the pulse rate can be compared one day with another.

It is well to count the pulse and take the temperature of body at the same time.

RECAPITULATION.

1. Have the patient as quiet as possible when you count the pulse; let the arm rest easy (in easy position).

2. Open the watch, and, with the finger on the pulse, commence to count when the second hand is opposite one of the figures, as directed.

3. Note if there is any intermission—missing of pulsations.

4. Make a record of the hour and rate of pulse, as well as temperature.

N. B.—The artery is not always found in the usual position near the wrist, it will vary in some. The anatomy of all are not alike.

RESPIRATION.

The normal respiration (breathing), is about seventeen (17) per minute.

Some authorities give 3¾, others 4 times the respiration for the pulse rate. That is, if a man breathes seventeen respirations to the minute, his pulse will be four times that, to-wit: sixty-eight.

There can be no universal rule in these cases, but in a large majority, I think the rate given above, is correct,

i. e., that there will be four beats of the pulse to each respiration; this is when the heart and lungs are acting in harmony (health).

In counting the respirations, it is always best to do so, unobserved by the patient, for if the patient notices that his breathing is being counted, it will interfere with the same, and he will often force the respirations. The most favorable time to count the breathing is when the patient is asleep.

Observe the same directions in counting the respirations, as directed for *pulse*, to-wit: Open the watch and note when the second-hand is opposite a given figure, then count each inhalation, until the same reaches the next figure, then multiply, etc., (see directions for counting pulse).

Do not count the exhalation, as the exhalations and inhalations constitute one respiration.

In malarial forms the breathing is usually not much increased. Much is owing to the degree of restlessness and nervousness of the patient. In ordinary cases one to two respirations for each degree of fever. In congestive forms of fever the breathing is often rapid and sighing, and in some cases labored (forced).

RECAPITULATION.

1. The average normal respiration in an adult is seventeen (17), faster in females, and more rapid in children.

2. Count the respirations unobserved (when possible), by the patient. When asleep is the best time.

3. Count by the watch as directed for pulse, and only count inhalations.

4. In ordinary cases of Malarial Fevers the respiration is usually increased one to two respirations for each degree of fever; in congestive more rapid.

GENERAL REMARKS.

Before commencing the study of Malarial Fever, it is proper to discuss how and when to administer medicine.

In administering remedies to the sick, we should have a definite object in view.

There is no such thing in the practice of medicine as *specifics*, that is, a given remedy for each disease. Nature, or the natural workings of the system, affects the cure.

All the physician can do, is to rightly interpret nature, and assist in the work.

Some people, (and I fear some physicians also,) seem to think that their remedies effect the cure. Not so. Then always be sure you do not retard nature's work, instead of assisting it.

As said in the first of this book, try and be accurate. Mark on a paper the amount and kind of medicine given, also note the effect. This is very important, for in your excitement, you may forget. By all means, avoid excitement in the sick room. Be as *calm* and *cool* as possible.

Often the physician is told, on entering a room, in reply to the question, "what have you given?" "Oh! we have

given everything we know of, and the patient continuing to get worse, have sent for you."

This is no information to the physician. He wants to know exactly *what* has been done, so always state exactly. Tell him you gave opium at a certain hour, quinine at a certain time, pills, etc., just as the facts may be.

If the nurse has been careful, and noted all this on paper, just hand him the sheet, and at once he knows your line of treatment.

To show how easy it is to make a chart, the following is an example of how a record should be kept. It is not hard to learn, and any one that adopts it will soon acquire system. There is nothing like *systematic* work in any kind of business, and this holds good in the practice of medicine also:

JOHN SMITH, (SICK.)

Day.	*Hour.*	*Temperature.*	*Pulse.*	*Respiration.*
Oct. 1,	8 a. m.	100	100	20
" "	12 m.	102½	115	23
" "	3 p. m.	104	130	25
" "	9 p. m.	100	100	20
" "	12 p. m.	98½	68	17

This is a form of chart, and shows at a glance the condition of John Smith for October 1st, one day.

Now, on another paper, note the time and kind of medicine given, with any remarks, as follows:

John Smith was taken sick October 1st. 8 a. m. gave a dose of compound cathartic pills. At 12 m. gave a dose of

salts. At 3 p. m. gave a dose of bromide potassa. At 9 p. m. commenced giving quinine, in five grain doses, and have repeated every three hours.

REMARKS.—Bowels acted well two or three times. Sweating freely at 6 p. m. Bowels acted again at 10 p, m., etc., etc. Under the head of remarks, note anything about the patient; if restless, how much he slept, and kind of sleep, etc., etc.

Do not make your notes in the sick room. If patient is very sick, it is well to write what he may say. Especially is this true of cases wounded, as it may be used as evidence in the courts of the country. I will remark incidentally, that statements made by wounded persons are not good evidence, unless they have been informed, or state that they are going to die. The dying statement then is good evidence.

By the use of such a record (chart) as I have given, it is an easy matter to see just what the patient has taken, and the record of fever can be compared, one day with the next, etc.

Always ask your doctor to write his directions plainly, and let you know just what he is giving.

The old idea that the patient or nurse must not know the kind or quantity of the medicine, is exploded. Let the physician state what the remedy is, and what he expects to accomplish from its use.

If a record was kept of every dose and the quantity, (as I suggested,) some people are forced to take during a spell of

sickness, it would be surprising that they ever recovered. Then there can be no question, but that often there is more drugs used than is necessary. Every day the profession are using less medicine, and often now cases are treated without the aid of so much drugs. But the people seem determined to poison their system, and the patent medicines are bought and consumed in this country by the car load.

The large majority of medicine sold are foreign to the system, and should be administered with care.

MALARIA.

DEFINITION.—"An unknown poison of telluric origin, the cause of the periodic fevers."—(Sternberg.)

It is impossible to say just what malaria is: as no chemist or microscopist has ever been able to demonstrate it; yet we know from its effect, and from places known to be malarial that it is a poison—and the difinition above given is a very good one—"The cause of the periodic fevers."

In this country all the fevers that come and go (periodic) we ascribe to malaria.

"A poison which is known only by its effects is necessarily a hypothetical substance, and yet there are not wanting those who deny altogether the existence of such an entity as malaria, and who would account for the disease commonly ascribed to the action of this poison, by the supposition that they are due to immaterial causes, such as refrigeration, electricity, etc., etc."

This manner is not satisfactory, and the belief in the poison as the cause has foundation, and one who has studied the subject closely must believe that a poison is under certain circumstances generated, which substance, for want of a better name, we call malaria.

While we are ignorant of its true character, we are conversant with its effects. The general belief is that it is atmospheric (a gas).

Men are slow to confess ignorance on any subject, but candor compels us to admit that malaria, or the substance that enters the human system and causes our periodic fevers, has never been seen nor demonstrated. Yet the almost universal belief is that it is a material agent, and all malarial fevers are classed as infectious and due to a specific cause—*i. e.*, a poison introduced into the system from without.

Much time and close labor has been spent in trying to solve the question, but so far all the skill of the chemist and microscopist have been in vain.

Malaria, then, is undoubtedly a poison, a real substance, generated by a due mixture of heat and moisture, intensified by vegetable decomposition, which, entering the human system, causes periodic fevers.

CAUSES—WHICH PRODUCE MALARIA.

In a work of this kind it will not be expected that I will be very elaborate in treating under this head.

As stated in the chapter on malaria—the cause is undoubted heat and moisture, with vegetable decomposition

Usually, if we know the *cause* of the sickness, it leads to a correct knowledge of the treatment, but in malarial sickness, as the cause is atmospheric—or rather the poison is in the atmosphere—it will be a difficult matter to remove the cause; so we are forced many times to remove the patient to a more congenial climate.

We have several forms of malarial fevers, and yet all caused from the same poison, *i. e.* malaria.

Why the one and same substance will produce a *chill* add *fever* in one, *remittent* fever in another, and *congestion* in another, is a question the profession can not answer. Yet we know from experience that such is the case. I need not state the reason for this conclusion, but state it as a well-known fact. We cannot see or handle malaria, yet it undoubtedly is atmospheric and enters the system at night. When we are asleep the system becomes relaxed and then poison enters; during sleep, the powers of life being to some extent dormant, and resistant at its lowest ebb.

This poison, which we call malaria, arises from the ground at night, in marshy places, it being more intense; when the sun arises in the morning it is dispelled. Consequently there is no danger from exposure, in a malarious district, during the day.

Prof. Flint makes the following statement in reference to the causation of malaria:

1. It affects, by preference, low and moist localities.

2. It is almost never developed at a lower temperature than 60° Fahr.

3. Its evolution or active agency is checked by a temperature of 32° Fahr.

4. It is most abundant and most virulent as we approach the equator and the sea coast.

5. It has an affinity for dense foliage, which has the power of accumulating it, when laying in the course of winds blowing from malarious localities.

6. Forests or even woods have the power of obstructing and preventing its transmission under these circumstances.

7. By atmospheric currents it is capable of being transported to considerable distances, probably as far as five miles.

8. It may be developed in previously healthy places by *turning up of the soil*, as in making excavations for the foundations of houses, tracts for railroads and beds for canals.

9. In certain cases it seems to be attracted and absorbed by bodies of water lying in the course of such winds as wafts it from the miasmatic source.

10. Experience alone can enable us to decide as to the presence or absence of malaria in any given locality.

11. In proportion as countries, previously malarious, are cleared up and thickly settled, periodic fevers disappear, in many instances to be replaced by typhoid fever.

I have quoted at length from Professor Flint's work, because these propositions are plain, and convey the idea so truthfully that malaria is a poison, generated by heat and moisture at a certain temperature (not less than 60° Fahr.), and the same is destroyed by cold (32° Fahr.), though in

our Southern States we undoubtedly have some malaria during almost every month of the year. In this connection, I will state that I believe the pneumonias of this country are effects, or often caused by malaria, and often relieved by the anti-malarial treatment.

It is a fact, that families who seem to have most *malarial* fevers during the summer and fall, have *pneumonias* during the winter. Quite a number of articles have appeared in medical journals, written to prove that it is one and the same poison that causes *malarial fevers* and *pneumonias*.

It is hard to convince some of my old Texas friends that the night air is unhealthy, and that sleeping exposed to same (when malaria abounds), will result in an attack of malarial fever. They contend that they were accustomed to sleeping in the open prairie (at night) for years, and never enjoyed better health. This is true; but it was before the country was settled, and while the prairies were covered with grass. The soil had not been turned up, and exposed to the rays of the sun.

Formerly, in this country, the only places known to be malarious were those near the swamps, low, marshy lands and washouts.

It is claimed by some, and no doubt true, that one of the fruitful causes of malarial attacks is the water drank. Especially is this the case with springs, shallow wells and tanks, while those who use pure cistern water escape.

This is positively denied by others. I am not positive myself, and cannot say whether the water drank is the

cause of malarial attacks or not—whether it is due to the presence of the poison in the atmoshpere, or in the water. As there is doubt upon the subject, I certainly think the patient should have the benefit, and cistern water, which is recognized (in this country,) as the purest drinking water, should be procured for one sick with malarial fever. Impure water, no doubt, debilitates the system, thus lowering the vitality, and in this way may make the subject more susceptible to malarial influences.

Professor Joseph Jones, in his "Memoirs," says: "The waters of low, swampy lands and rice fields are impregnated with organic matters, which, in certain seasons of the year, and under certain conditions, exert most deleterious influence upon the health of the inhabitants. The great mortality upon rice places, many of which decrease instead of increasing, is due to the character of the waters, which induce bowel affections, and degrayment of the blood, and low grades of fever." [I suspect he means increase where he has written decrease above, and *vice versa*.—L.]

Professor Jones recommends cistern water for well and spring water.

SYMPTOMS AND COURSE OF CHILL AND FEVER.

Names: Intermittent Fever, Chill and Fever, Ague.

Symptoms: In all well marked cases there is no difficulty in forming an opinion as to *Ague;* most people in this country are familiar with the symptoms.

It is characterized by paroxysms of fever, running through certain definite stages, and occurring at more or less regular intervals, with intermediate periods of rest.

In discussing the symptoms of *Intermittent Fever*, we will describe the three stages in the order in which they usually occur:

First—Cold Stage.—The cold stage is generally ushered in by yawning and stretching; often the patient recognises the fact that he is going to have a chill. Yet, in a large majority of cases, the attack is sudden, the patient suffering with pain in head and bones. Yawning, loss of appetite, general sense of illness. This may be followed by fever, and have no decided chill, or cold stage, and often the patient is mislead as to the true nature of his disease. This is especially true of the first paroxysm, but generally the second is more decided.

In the first paroxysm (attack) there may be no aching, and not much fever follow. The patient does not take his bed, continuing his business, or work; but on the following

day, about the same hour, or earlier, he experiences a decided chill, followed with fever of several hours duration.

When he has a decided chill, he is cold, (yet the thermometer in armpit may show heat of body,) has pain in bones, headache, cold waves up and down the spine, shivering, the teeth chattering, skin looks rough, the patient is in a rigor, and shakes. This is what we call the "Arkansaw Shake."

The pulse is usually small, and anxiety depicted on his countenance, in some instances lividity, lips and fingers blue.

He wants plenty of cover on his body, and yet the cold waves continue. This cold stage may last only a few minutes or an hour, generally about forty minutes, then follows the *hot stage*, one passing into the other gradually. Often the duration and intensity of the cold stage, indicates its severity.

When there is much lividity of the surface, and the tips and fingers blue, vomiting, with some pain in the chest and head, it indicates congestion. When these symptoms occur with children, they are liable to have convulsions.

In the congestive form, death may take place soon after the patient is taken with the chill. I have known death to occur in two hours after the first symptom of the chill, his body rapidly becoming cold and livid. He soon passes into a deep comatose condition, from which he cannot be aroused. No reaction taking place, death soon closes the scene.

I have seen this occur so often, that I always try to im-

press upon my patients the importance of taking remedies early, in order to avoid the second paroxysm; for generally we do not have a congestive one at the first paroxysm, nor is there anything to warn us that the second or third is liable to be a congestive chill.

Usually, in this country, the most cases of congestion occur early in the season, among the first cases of fever, and many deaths occur from neglecting to take proper remedies in time. So always try to check a chill and fever as soon as possible, for fear of congestion; for every chill and fever the patient has racks his system, producing changes in the blood and organs of the body, making it more difficult to treat.

Some people seem to have no fears of chills and fevers, and will not try to check the same, expecting to wear them out.

I have made it a rule for years, when a patient applies to me for treatment for ague, to stop the paroxysm at once, fearing the next may be a congestive chill, and knowing the damage done the system by repeated attacks even of the ordinary ones.

HOT STAGE—OF INTERMITTENT FEVER.

The cold stage passes gradually into the hot, the pulse becomes quick, the chilly sensations cease and the body becomes warm, the head and bones ache ; in fact, the patient will inform you that he aches from the top of his head to his heels.

The thermometer, applied to axilla, will show, perhaps,

about 102° of fever, which continues to rise until it reaches 104 or 105°.

The urine becomes scanty, water is drank freely, and often as soon as it becomes warm in the stomach, is ejected.

The eyes are injected and sparkling, the face flushed, delirium often accompanies this stage, and with children convulsions often occur. The child will often sleep, and when aroused seem frightened and always very nervous.

Fever affects no two alike—some will lie quiet and sleep the fever off; with others only a moderate fever, 102°, will cause delirium and the patient will be difficult to control, talking rapidly, and often it will be difficult to keep him in bed.

The practice of former years was not to allow water during the hot stage, but the modern and correct practice is to allow water drank freely.

I always give my patients water or lemonade, with a small allowance of ice. (I think harm may be done by using the drinks too cold.)

Even if the patient vomits the same it cools the stomach and produces free perspiration.

The fever, or hot stage, usually lasts about four hours, but in some instances more than twice that time.

With children there is always danger of convulsions, until the fever commences to cool.

When the fever is subsiding the skin becomes *moist* and *cool*, the pulse soft, and the thirst is not so great.

In some instances, when the fever is high, the skin is

moist, but always hot under the moisture ; but, usually, the surface is hot and dry during the paroxysm of fever.

SWEATING STAGE—OF INTERMITTENT FEVER.

Now comes the calm after the storm—as the fever begins to subside, the skin becomes moist and the surface cool, sweating breaks out about the forehead, gradually extending over the whole body, and soon the patient is bathed in a profuse prespiration.

The head-ache disappears, the thirst is abated, and the patient feels easy but weak, usually falls into a quiet sleep; with this ends the paroxysm.

In young children the cold and sweating stages are not so distinctly marked as in the adult.

The above finishes the discription of an ordinary chill and fever. Most of us in this country have experienced the same. After a rest of twelve (12) to twenty-four (24) hours the chill and fever may and most certainly will (unless appropriate treatment be instituted) return with force, and perhaps more intense than the first one.

TREATMENT—(OF CHILL AND FEVER).

First—Let the nurse be satisfied of the nature of the case, *i. e.*, that the patient has ague. Most people in this country are so familiar with the symptoms that there is often no doubt in their minds as to the illness, and they seldom make a mistake.

Cold Stage—There is no special treatment to be given during the cold stage, and often none necessary, as it cannot be cut short.

Placing the patient in bed, applying bottles of hot water to body, bathing the feet and legs in hot water and mustard, usually moderate the symptoms to some extent.

Hot drinks are not admissible; they usually do more harm than good. A dose of Hydrate of Chloral, (15 to 20. grains,) is often given to an adult. This is a good remedy, and will relieve the head and back ache, and to some extent stop the rigors; but chloral is not a safe remedy in the hands of the people.

Chloroform, administered internally, (one-half teaspoonful, well diluted,) will lessen the rigors, and relieve all the disagreeable symptoms, but chloroform is another one of those remedies that should be administered with care, and generally only by a physician.

In a work of this kind, (written for the people,) during the cold stage of *Intermittent Fever*, I recommend only the common domestic remedies.

The room should be well ventilated, apply hot applications to the body, plenty of cover to the patient, with hot water and mustard to feet and legs.

If patient complains of pain in stomach, and it is loaded, (chill just after a meal,) it is well to administer an emetic—a glass of warm water and salt, or warm water and mustard. After the stomach is well emptied, if nausea should continue, small doses of morphine (1-16 gr.) will relieve the same. In fact, morphine, while it quiets the stomach, will also relieve the nervous system, and afford great relief, often

shortening the chill and lessening the duration of the hot stage.

Should the cold stage continue, and the patient become prostrated, his skin blue and cold, restless and vomiting congestion has taken place, and it will be well to use whiskey, or brandy, and quinine freely, giving a wine glass of whiskey, or brandy, with five grains quinine, and repeat in one-half an hour, if necessary. If the stomach will not retain it, inject in the bowels. This dose should be repeated every half hour, with mustard to the stomach and bowels, until the chill, or cold stage, ceases, and the hot stage commences. Often the patient will die in this cold stage (congestion,) in two or three hours, unless active means are used to bring about reaction, such as mustard to the surface, whiskey and quinine internally, with small portions of morphine to relieve nausea and restlessness.

If bowels are constipated, I usually administer either saline cathartics, or use the syringe, with warm water and soap—in some instances doing both, using the syringe to hasten the action of the saline cathartics.

The best salines are either epsom salts or seidlitz powders. If bowels are hard to act on, compound carthartic pills (improved) are better, (dose 2 to 3). They are a splendid cathartic pill, and contain no calomel.

I have now fully stated what may be necessary to do, under certain circumstances, in the cold stage; yet in the large majority of cases there is no necessity of any treatment for

the patient, as the cold stage only lasts a short time, and causes no great amount of suffering.

Hot Stage—(*Fever*)—The chill, (as stated), usually lasts but a short time, and then follows the fever.

If the patient's stomach is quiet, and can retain quinine, I usually give one capsule, containing five (5) grains, and repeat every three or four hours, using about fifteen grains of bromide potassa with each dose.

Bromide Potassa is a safe and simple remedy, one that can be used without any danger. It prevents the quinine from affecting the head. Bromide Potassa is a remedy I always use in the treatment of malarial fevers, in the dose of 10 to 15 grs., repeated every three or four hours during the hot stage.

Give the patient cold drinks—either lemonade or ice water—using care not to take too large quantities at a time; small sips to quench the thirst; large draughts chill the stomach, and are liable to do much harm, while small quantities of cold water or cold lemonade allay the thirst, and act on the skin and kidneys.

Many physicians do not use any quinine during the hot stage of an intermittent fever, but wait until the fever subsides and the patient commences to perspire freely, but my practice has always been to give quinine (when the stomach will retain it) during the hot stage, and I have seen no cause to regret it

Applying cloths with cold water to the head, is very grateful. Protecting the bed with an oil cloth and laying

the patient's head on same, then pouring the water over the head, will often relieve the pain in the head and is very re-refreshing.

Sponging the body well and using saline cathartics (if necessary to move the bowels) will lessen the fever.

There is no necessity for preparing the system for quinine.

It is well to open the bowels, especially if they be consticated, and in doing so it relieves the portal system, liver, spleen and kidneys ; this, according to my judgment, is best done by saline cathartics.

I always give quinine to children in the hot stage; when they are very nervous use large doses of bromide potassa at the same time.

If they are threatened with spasm, give either chloral with the bromide potassa or use bromidia.

Flint, in his excellent work on practice, recommends waiting until the fever subsides and the sweating commences, before using quinine. He then gives it in large doses ; to an adult 15 to 20 grs., but I prefer smaller doses, repeated as above suggested. The quinine is the *sine qua non* in the treatment of chill and fevers; this is conceded by all authorities.

The bromide potassium should always be given to children to prevent convulsion.

Sweating Stage.—When the fever subsides, the patient begins to sweat freely, his skin is cool, pulse soft—all the aches and pains disappearing ; he feels weak and will often sleep. This stage requires no special treatment, but an ef-

fort must be made to prevent a recurrence of the paroxysm.

While it is the practice of many physicians to administer large doses of quinine in this stage, I much prefer 5 grain doses (for an adult, children in proportion) every two or three hours, until the patient is thoroughly cinchonised, then make the doses less frequent, 5 grains every 5 or 6 hours and continue this for four or five days.

If the appetite is poor, using a tonic of iron and quinine (see general remarks on the treatment of malarial fever).

The bowels should be kept open, at least one action from same a day, avoiding any remedy that will debilitate the system.

The patient will require sustaining remedies, for chills and fever always debilitate and tend to break down the system, consequently we must build up, using no remedy that will weaken him. Keep in view the fact that the patient is poisoned with malaria, and that quinine is the antidote.

If the sweating is profuse and the patient weak from the same, give a stimulant, either whisky or brandy.

NOTE.—Care should be exercised in administering quinine to a lady, when pregnant, as large doses may cause her to miscarry. Quinine will do this in some cases. The best plan is to give in doses of two or three grains and repeat every three or four hours, and if any pain is excited in the womb, give either laudanam (15 drop doses) or morphine (⅛ to ¼ grs.)

Much care must be exercised in treating such cases with quinine. Some physicians doubt quinine possessing *oxytoxic*

power, but I am firmly convinced it has, especially when given in large doses.

Period of Intermission.—This is the time to thoroughly *saturate* the system with quinine. Do not let the patient overload his stomach with food, for in some cases the appetite is *ravenous.*

Watermelons, apples, peaches and such articles are injurious and should not be allowed. A bland nourishing diet is all that is necessary. Keep the bowels open. If any diarrhœa, it should have appropriate treatment.

REMITTENT FEVER.

SYMPTOMS AND COURSE.

Name.—Remittent Fever—Bilious Fever.

Definition.—"A paroxysmal fever of malarial origin, which differs from malarial *intermittent fever* mainly in the fact that the hot stage is more prolonged, and is not followed by an interval of complete absence of fever; and that the cold stage is commonly ill defined or entirely absent, except at the outset. In severe cases gastric irritability and bilious vomiting are common symptoms."—(Sternberg.)

They are a class of malarial fevers characterized by *remissions* and *exacerbations*, but without *intermissions.*

The name *remittent* alludes to the *remission* or *cessation* of the febrile symptoms.

There is not that distinct *intermission* as in *intermittent*

fever, but a *remission* or *diminution* of the febrile symptoms.

Often a chill and fever, if allowed to run their course unchecked, may assume the remittent form.

The attack in remittent form is usually gradual, commencing with aching of the head, back and bones, a feeling of illness; this will sometimes amount to a rigor, with chilly sensations, soon followed by flashes of heat of the surface.

The thermometer applied at any time (even during the rigor) will show an elevation of temperature.

The pulse is small and generally accelerated, the breathing irregular and sighing, the patient often restless; vomiting soon sets in.

As to these symptons, they vary much, as much depends upon the patient; fever affecting no two alike; some will lie quiet and sleep when they have fever, while others are restless and somewhat delirious.

The tongue is usually coated with a white fur, the margin is red and often *indented by the teeth*. Some physicians regard this *indentation* by the teeth as a sure test for malarial fevers.

While I do not lay as much stress on this symptom as others, yet I freely admit that it is a good indication of malaria in the system. There is a mawkish taste—appetite gone—water and cold drinks being alone craved.

The fever usually runs its course from ten (10) to twenty-four (24) hours; then comes a remission.

That is, the fever subsides to perhaps 99½ or 100°, the

skin becoming moist, but unless appropriate treatment is adopted, the fever will soon return and will be more intense, so we have almost a continued fever.

Sometimes it is difficult, espcially at the commencement of an attack, to know whether the fever is malarial remittent or typhoid.

In typhoid fever the temperature is usually 100 to 101° in the morning, and seldom over 102 to 102½° in the afternoon.

In remittent fever, during the remission, the fever may be as low as 99½°, or even normal; it soon rises, however, to 104 or 105°. In remittent fever the fever is more intense, with aching of head, back and bones, while in typhoid fever, usually, there is no pain.

In remittent fever the bowels are generally constipated,—in typhoid, the bowels are tender and loose.

In remittent fever there is often a sense of oppression in the stomach, and usually vomiting; yellowness of skin is also common, which, with a coated tongue, often leads physicians to say that the liver is the cause of the fever and that the patient is bilious.

True, the liver is affected, but not more so than the stomach, heart, spleen, brain, or, in fact, any other organ of the body.

The poison (malaria) that causes remittent fever, affects the blood, and, as a matter of course, every organ in the body suffers.

If the temperature reaches 105°, the case must be treated energetically, and with children convulsions will often oc-

cur, unless under the influence of some remedy to prevent them.

When in any doubt as to whether the fever is typhoid or malarial, I usualiy test the same by using quinine freely. If malarial, the fever will subside when the patient is fully under the influence of the same; but if typhoid, the symptoms will all remain and no harm result, only the disagreeable symptom of cinchonism, which will soon pass away, if the quinine is withheld. However, if the quinine should be given in large doses (13 to 30 grains), there will be some reduction of the temperature, but only for a short time.

In remittent fever there may be two remissions in twenty-four (24) hours, and again it may be forty-eight (48) hours without any.

In some cases this is owing to the treatment that the patient has received.

After the remissions occur a few times, if the patient takes no anti-malarial medicine, the remissions may cease to occur, and then the fever becomes continuous, assuming often a low form, *simulating typhoid*; yet it is not a true typhoid, but simply a low form of malarial fever.

RECAPITULATION.

The following is a very good description of the symptoms of remittent fever, and cover what I have written above so well that I quote:

"There are generally premonitory signs, but the attack may be sudden.

"Gastric irritation is usually first noted, there being a sense of uneasiness or oppression at the epegastrium, nausea, and anorexia, with headache, general pains and a feeling of languor.

"Some chilliness or rigors may be experienced, but there is no cold stage of any duration, and the temperature rises immediately.

"The hot stage becomes very intense, the skin burning and dry; the face flushed, the eyes injected, with intense headache, giddiness, restlessness, sleeplessness, and often delirium, which is sometimes violent. Vomiting and nausea are commonly present, the vomited matters consisting first of food, then of a watery fluid, and finally of biliary matters; they may become black or brown.

"A sense of great oppression and weight is felt in the epigastrium; the tongue is furred and tends to dryness, the lips are parched and there is intense thirst,

"The pulse is frequent, and either full or small and compressible. The symptoms abate generally in from six to twelve hours, but may continue for twenty-four, thirty-six, or forty-eight hours, or longer.

"Some perspiration usually breaks out as improvement takes place.

"The remission is of variable duration, and this is followed by an exacerbation which is of greater intensity than the first paroxysm."—(Encyclopedia of Medicine and Surgery.)

TREATMENT OF REMITTENT FEVER.

Being satisfied that the case is one of remittent fever, then the treatment is easy.

Quinine is the *sine qua non*—the remedy of all remedies, in the treatment of this disease.

If there is such a thing (?) in medicine as a *specific*, then quinine is for malarial fevers in all their forms.

There is no need of preparatory treatment (getting the system right for the quinine), nor is there any need of waiting for a remission; *give the quinine at once!* in doses of five (5) grs. (for an adult) every two hours, is the dose I usually employ.

Give the quinine in a capsule, and it will be retained, on the stomach, better.

If there is much nausea and vomiting, a small portion of morphine will often quiet the stomach. Mint water or one drop of creosote (well diluted) with bismuth will settle the stomach.

Morphine in my hands has always acted well when all other remedies failed.

If the bowels are constipated, give epsom salts in broken doses; one teaspoonful of salts dissolved in a small quantity of water, repeating this dose every two (2) or three (3) hours until the bowels act well.

Give bromide potassa, in doses of from fifteen to twenty grains, to relieve the pain in the head and back. In fact, I sometimes think bromide potassa has some specific effect on

malarial poison,—at any rate it is a good remedy to use with the quinine.

Continue the quinine and bromide potassa every two (2) hours until the skin becomes moist, the pulse soft, and the thermometer shows the remission of the fever has occurred; then, if the patient is fully under the influence of quinine, make the intervals longer—every four or five hours instead of two.

When the patient is thoroughly *cinchonised*, roaring in the ear and some deafness will be the result. Most people in this country are familiar with the use of quinine, and know when a patient is under its influence,

The danger in treating remittent fever is in not giving enough quinine, and very few are likely to give too much. Cloths wet in cold water and applied to the head, are grateful; or pouring cold water over the head; cold drinks of water or lemonade may be given to gratify thirst, but not too profusely, as large draughts will often cause vomiting.

If the quinine can not be retained on the stomach, then double the dose and inject in the bowels. The best plan of using quinine by the bowels, is to *first* give the patient a large injection of warm water and soap, thus washing out the lower bowel well, then give the quinine in as small a quantity of water as possible, after the large injection of warm water and soap has passed; then the patient will be more likely to retain the quinine injection, and the same will be absorbed by the bowels more readily.

The injection of quinine should be repeated every three or four hours.

The best plan to prepare the quinine for injection is to dissolve the same in a few drops of elixir of vitriol and then add a small quantity of water, as quinine don't dissolve well in water alone. One drop of the vitriol to each grain of quinine will make a clean solution and pass through the syringe more readily.

The plan of rubbing quinine on the skin, is of not much service,—the skin is throwing off in fevers,—and it is very questionable as to the amount that is absorbed in any case.

However, in children, when it cannot be retained by the stomach or rectum, the practice of rubbing on the surface should be resorted to—one teaspoonful of quinine mixed with one half teaspoonful of lard, and this spread over the chest and under the arms, or the quinine can be dissolved in whiskey and applied in like manner.

Time, precious time, must not be lost in these cases. Get the patient under the influence of quinine as quick as possible.

Children with remittent fever often have convulsions when the fever is high, and I respectfully refer to the chapter on convulsions for the appropriate treatment.

Chloral hydrate and bromide potassa, of each about fifteen grains, diluted, will relieve the pain in the head and back so much complained of in remittent fever. It is also the dose to give when the patient is delirious and restless. Bromidia is also an excellent remedy in such cases, as it

contains chloral hydrate, bromida potassa, Indian hemp and hyosciamus, a good combination, and one that generally acts well. Dose, one teaspoonful (for an adult), well diluted. If the patient has an irritable stomach, the chloral hydrate and bromide potassa will be more likely to be retained than bromidia.

If symptoms of congestion occur, increase the dose of quinine, using brandy or whisky also.

Emetics and mercurial cathartics are not necessary. Under the head of general treatment this subject is discussed at some length.

After the patient has had fever for some days and seems prostrated, then supporting remedies will be necessary; a moderate amount of brandy or whisky, and a good diet of soup, etc., etc.

It will be necessary to use the same precaution in treating women in family-way (pregnant) with remittent fever, as described in the *note* in intermittent fever.

Warberg's tincture is an excellent remedy in remittent fever, and much used by the profession. It contains a large amount of quinine and cinchonidia, rather costly; but I have thought best to recommend quinine alone, as the people generally know the dose and are familiar with its use.

RECAPITULATION.

1.—Keep in view the fact that the patient's system must be saturated with quinine, and that as soon as possible. If the stomach will not tolerate it, give it by the rectum,

and if not retained, apply to the surface of the body.

2.—If nausea and vomiting, check by creosote and bismuth, mint water, or small doses of morphine, also apply mustard to stomach.

3.—Open the bowels (if constipated) with salts; small doses, repeated every three or four hours; at the same time using large injections of warm water and soap in rectum.

4.—Apply cold water (not ice water) to head, using small quantity of ice water or lemonade to gratify the thirst.

5.—For severe pain in head and bones and convulsions in children use chloral hydrate and bromide potassa, or bromidia.

6.—When the patient is convalescing use a tonic.

HEMORRHAGIC MALARIAL FEVER.

SYMPTOMS AND COURSE.

Name.—Hemorrhagic Malarial Fevers, Intermittent Hæmaturia, Black Jaundice, Malarial Hæmaturia. (In Texas, this fever is known as Black Jaundice.)

Definition.—"This affection is characterized by the occasional, and generally periodic, discharge of albuminous urine, more or less deeply tinged with the coloring matter of the blood, and frequently containing blood, and casts of the uriniferous tubules. It occurs most frequently in malarious regions, and in individuals who have suffered repeated attacks of malarial fevers; and the discharge of bloody urine

is often, but not always, attended with symptoms which characterize an attack of ague, and with jaundice."—(Sternberg.)

This is one of the graver forms of malarial fever, and the mortality is great.

My experience is, that this form of (hemorrhagic malarial) fever, always occurs in one whose system is broken down from repeated attacks of malarial fevers, (either ague or bilious).

The symptoms are the same as in either ague or remittent fever, except that the urine is bloody, and in some instances blood passes from the bowels, and is vomited. That from the stomach is usually dark, resembling coffee grounds in appearance. The skin becomes jaundiced, and later on appears blue, and from this symptom many in this country call the fever the "black jaundice."

There is generally no difficulty in forming an opinion as to the disease.

The attacks are *periodical*, as in ague; or there is a remission, as in bilious fevers. The skin is first yellow, afterwards dark (or blue). As said above, this symptom accounts for the name given to this disease by some.

I object to this name, for the reason that the jaundice is only one of the symptoms, and carries no true idea as to the nature (pathology) of the disease. Hemorrhagic malarial fever, or malarial fever with hemorrhages, describes the disease more fully.

These cases are *always serious*, and the patient should

have the counsel of a physician, if possible, without delay.

The urine varies in color, from a smokey hue to pure arterial (red) blood. "The bloody urine may appear during a paroxysm of intermittent fever, which has been preceded by one or more paroxysms unaccompanied by this symptom; or it may appear suddenly in one who has been subject to malarial attacks, but who has not experienced one for some time. In this case, it is commonly produced by exposure to damp and cold. After such exposure, the patient gets up in the morning feeling languid, and indisposed to take food or to exert himself. Later on, he may have slight chilly sensations, or a distinct chill, followed by more or less fever. then he discovers his urine, which was perfectly clear when he first arose, has suddenly assumed a bright or dark red color, or it may be the color of porter. Upon standing, it deposits a copious reddish brown sediment,

Two or three discharges of this character may take place, and then the urine suddenly, or gradually assume its normal appearance.

The discharges of bloody urine are sometimes preceded by a sense of fullness, or of pain, in the region of the kidneys; and this, with a feeling of weariness, may be the only symptom attending the attack, other than the hemorrhage.

The periodic character is manifested by a recurrence of the attack every day, or every second or third day, at the same hour. The paroxysms *may* occur at longer intervals,

and without any very decided regularity as to the date of recurrence.

In some cases, the symptoms of hemorrhagic malarial fever resemble yellow fever, and the fever is called by some *Malarious Yellow Fever*, a name liable to mistake.

Yellow fever is a disease of one paroxysm, and *intensely contagious*, while malarial hemorrhagic fever has an intermission, or remission, in the fever, and is *not contagious*.

There can be no doubt as to malaria being the prime cause of this form of fever: all authorities, I think, agree on this point.

The people, in this country, have a great dread of this disease, and regard the same as almost always fatal; yet I am satisfied, if the facts were known, most of the cases recover.

I know this is true in the practice of the physicians in this part of the South, who seldom lose a case, unless it is one in which the disease has been allowed to run its course for some time, without treatment, or in a patient whose system has been badly wrecked (broken down) by repeated attacks of malaria, and who lives in an intensely malarial region.

A writer in Dr. Jones' Memoirs, says: "I find that every patient I have had or seen (with hemorrhagic fever) has had previous attacks of chills and fever, and in consequence the spleen is very much enlarged. So invariably is this the case, that when my friends enquire of me how to avoid this disease, I tell them to break up their chills promptly, and

not to let their blood be poisoned by the long continuance of them." This is from the pen of a physician in Louisiana, and is good advice.

Another Louisiana physician says, (speaking of hemorrhagic malarial fever,) "I have never seen a case of serious or grave import, but in connection with indubitable proof of chronic and intense malarial toxæmia" * * This confirms what was said in the first part of this book, *i. e.*, "to break the chills at once." Every attack racks the system to some extent.

Many observers contend that the urine is not bloody, but stained with the coloring matter of the blood. On this point, the evidence is very conflicting; but be that as it may, surely the passages from the rectum, and in some rare instances from the stomach, is pure blood. Professor Tyson says, "In this form of disease especially, it often happens that the coloring matter only, and the debris of blood disks, are found in the urine, very few, and often no entire ones being discernible" - - -. Ferand asserts that the presence of blood in the urine is exceptional, and that the nidanuria (black urine) is due to bile pigments. He says, "The very remarkable color of the urine in nulamisic bilious fever has caused the vulgar to believe, and for a long time the doctors also, that the liquid contains a large proportion of blood; and I confess that for my part, I have been very much struck with it. At first view, it seemed very difficult to believe that the color which I had before my eyes was not due to blood, and even to very pure blood, but my opinion has

been modified * * I examined more than twenty different specimens of melanuric urine, by means of the microscope, without ever discovering a single blood globule, * * Not wishing to trust to my personal examinations, I have had numerous examinations made by medical officers under my orders, several of whom had ample experience in the use of the microscope, but no one among them was more successful than myself."

Dr. Joseph Jones, of New Orleans, finds blood in the urine in these cases.

Dr. Sternberg says, "While we must admit that the presence of blood has been established in numerous cases, yet it is beyond question that bile-pigments are also present in large quantities, and perhaps more uniform than blood. The disease is essentially a *bilious* fever, and aside from the presence of blood in the urine, has no decided hemorrhagic tendency."

TREATMENT OF HEMORRHAGIC MALARIAL FEVER.

In no form of malarial diseases are the profession so divided in their treatment, as in this.

While the large majority agree that quinine should be administered, others argue stoutly against its use, claiming that quinine aggravates the kidneys and increases the flow of blood.

My own experience is decidedly in favor of its use.

Dr. Druett says, (in writing of the treatment of this form of malarial disease), "Of medicine deserving the name there is but one, and that is quinine in full doses."

Prof. Tyson says: "The treatment is distinctly that of malarial disease, and I have seldom seen more brilliant and satisfactory results than have followed the use of quinine, in a case accurately determined, although such results are not invariable, and I have known the disease to resist for a long time the most thorough and judicious use of anti-malarial remedies."

Quite a variety of remedies have been used to check the flow of the bloody urine, such as vegetable acids, sulphate iron, sugar of lead, catechu, chlorate potassa, etc., etc. The benefit derived from any of them has been questionable.

I would recommend in every case (until a physician can be consulted) that the bowels be opened with an injection of warm water and soap, and quinine be used freely; dose, five to ten grs., (for an adult,) every two or three hours; with bromide potassa to quiet nervousness.

Warburg's Tincture is the best remedy that can be used, in this form of malarial disease. It has been much used of late, and is regarded by all as one of the very best. Formerly it was a patent remedy, but its formula is now known to the profession.

The formula is printed on the bottle, with the directions, and I can safely recommend it, in these cases. The dose for an adult is one teaspoonful, diluted. Repeat every two hours, until the patient is fully under the influence of same, Dr. McLean says, "It acts as a powerful diaphoretic, the most powerful with which I am acquainted." In this way, it may relieve the kidneys of extra work (by acting on the skin

freely), as well as by destroying the malaria in the system.

My plan of treating hemorrhagic malarial fever, is the same as the graver forms of ague and remittent fevers, except that opiates, in all forms, should be avoided (if possible).

This form of malarial fever seldom occurs, except in subjects whose systems are broken down by repeated attacks of malarial fevers; consequently the system should be toned up. After the paroxysm is over, the patient should by all means be moved out of the malarious atmosphere.

It is astonishing that a sensible person will live in a place known to be intensely malarious, and be subject to repeated attacks of hemorrhagic malarial fever, when perhaps a few miles travel would remove him from the malaria.

I can speak from experience, that the case subject to such attacks, and continuing to reside in such malarious locality, will soon succumb to the disease.

We cannot remove the cause, because it is atmospheric, but we can certainly move the patient.

Remove him (after the paroxysm has passed,) from the malarious place, give him quinine and iron, with a good, generous diet, and he will soon regain his health.

In speaking of these cases, I often use the following homely illustration: Suppose a man is bitten by a snake. We administer antidotes, and relieve him. He recovers, but is considerably debilitated. Immediately he lets the snake bite him again. How long can his system stand these repeated injections of poison? Just so with malaria.

We administer remedies to neutralize the poison (malaria) in the system, but the patient immediately is exposed, and again takes in the poison (by staying in the malarious region), consequently it is only a question of time as to how long his system will bear these repeated attacks.

I have no experience with turpentine in these cases. While free action from the kidneys is desirable, it is perhaps best to obtain that result by using water freely.

A writer, Dr. Thompson (ex-Cenfederate Surgeon), and whose field of practice is in the malarious regions of White River, Arkansas, says, "Cure the malarial malady, and you can cure the hæmaturia" (bloody urine). He regards "quinine as the sheet anchor in the treatment."

There is a great diversity of opinions among authorities, as to the treatment of this grave form of malarial sickness. My own experience is in favor of the quinine treatment. It is well to state, in some of the graver forms, no remedy seems to avail, and the patient dies.

Some physicians give a mercurial (calomel) purge (10 to 15 grains) first, and then follow with quinine.

If calomel is admissible in any form of malarial disease, it is in this, from the fact that radical changes have taken place in some of the organs, and the kidneys are certainly irritated, if not inflamed. Calomel will sometimes quiet the stomach, check vomiting, and unload the liver and bowels.

I do not think there can be any question but that calomel, when administered, passes out of the system by the kidneys,

as well as by the bowels, and may do good in this manner; yet I think the same results can often be accomplished by less irritating and debilitating remedies, rhubarb, salts or oil, or the remedy so much in use in this country, Simmon's Liver Regulator. I am averse to recommending a patent nostrum, but this one is so universally used, that nearly every family in this country keeps a supply on hand.

In detailing my experience with malarial hemorrhagic fever, I must confess that the country that I have practiced in is not so intensely malarious as some parts of this State, Louisiana and Mississippi, and perhaps it has been the milder forms that I have had to contend with. Many of these physicians are positively opposed to the use of quinine in this form of malarial disease, some using none, others waiting until the paroxysm subsides and the urine becomes clear, then administering quinine.

A few writers believe that quinine will cause the urine to become bloody again. Below are a few extracts from some who hold these views: Says a Louisiana physician, "I persistently used quinine for a long time, and lost my cases. Now that I have rejected it altogether, the mortality is much less."

It will be unnecessary for me to quote at length from men who hold such views, as this book is supposed to reflect my own, and I must say still, that my confidence is in quinine.

It is the great anti-periodic remedy. After examining all the latest authorities on this subject, the preponderance of evidence is in its favor.

Saline cathartics, with warm water and soap injections; mustard to stomach and chest, Warburg's tincture or quinine, and bromide potassa to quiet nervousness.

Dr. Webb, of Alabama, who seems to have had much experience with this form of fever, says:

"Quinine will undoubtedly, in a certain number of these cases, increase the hæmaturia (bloody urine), and sometimes even seem to cause it. Seeing this, the timid administrator stops his quinine, and his patient dies, with quinine under the ban of killing him; whereas, with a bolder hand, directed by a proper idea of the true cause of this symptom (a disturbance of the vaso-motor system under malarial influences), he would have unhesitatingly continued it, and his patient might have had a good chance to live. Remove the cause of the disease, and the hæmaturia (bloody urine) will cease. I have seen quite a number of cases to which this remark applies, some in which the quinine, given at the expiration of the second hebdominal period, as a prophylactic measure, (a measure familiar to all physicians in malarial regions,) caused a return of a decided hæmaturia, without fever. In these cases, I have not hesitated to repeat the quinine next day, with the best results.

Again I advise that a physician be called to these cases, at once, as this is one of the grave forms of malarial disease, and requires much skill to treat. By all means, (as soon as possible,) remove the patient out of the malarious atmosphere.

GENERAL REMARKS ON THE TREATMENT OF MALARIAL FEVER.

Having discussed the various types of fever, their cause and treatment, I propose, under this head, to discuss at some length, the treatment recommended, quoting from authorities to sustain the theory set forth in this work.

There is no such thing known in medicine as an *infallible* remedy, *specifics*—here is the disease and there the remedy.

Nature is the great worker. It is the natural working of the system that effects the cure in any case, and all we can do with medicine is to assist nature in its work. This is a fact that is too often lost sight of, and many times physicians give more than is necessary. Most of the remedies used as a medicine are *foreign* to the system.

In a work of this kind I cannot enter into details and explain how the various medicines are supposed to act in the system, nor do I think it essential; suffice it to say that the "great majority of medicines must obtain entry into the blood, or internal fluids of the body, before their action can be manifested."

I have explained the symptons, course and treatment of malarial fevers, in as condensed a manner as possible, and tried to impress the fact that *malaria* is undoubtedly a *poison*, that enters the system, causing periodic fevers, and that ex-

perience demonstrated the fact that *quinine* is the remedy of all remedies,—the grand old medicine that has safely carried us through many trying cases of malarial sickness.

Quinine, when early and freely used,—before any changes are produced in any of the vital organs by repeated attacks, will stop or cut short any attack of malarial fever.

Let me *emphasize* the fact that the system needs no *preparation* ; the preparatory treatment generally used is worse than useless. It hurts the system and consequently does harm. *Calomel*, the remedy usually administered, was given years ago, under the impression that all fevers were inflammatory, and like all ideas that obtain a hold on the minds of the people, it is hard to eradicate ; although it has been proven (often) to be *erroneous*, for calomel is positively hurtful in malarial fevers.

For ten years I have abandoned its use in the treatment of malarial fevers, and have found no cause to regret it.

Often physicians speak of its action on the liver and claim to administer it for its effect on that organ. It is very questionable whether it has *any effect* on the liver. The dark and offensive discharges that follow its administration are said to be due to a decomposition of mercury in the system. The discharges have been examined time and time again and no bile found, but the color shown to be due to the mercury. The same actions will follow if calomel is administered to a man in perfect health.

Doctors (I fear) are like other people, that is—it is the

fashion (custom) to use certain remedies, and they use them without questioning the utility of their action.

The old practice to commence with calomel and blue mass and then use quinine, has had its day, for most intelligent people dread calomel, and are asking: Is there not some way to avoid its use? *I answer, it is unnecessary.*

Sternberg (one of the very best authorities on malarial fevers) says:

"Formerly the opinion prevailed that a certain course of preparatory treatment was necessary, in order that quinine might favorably influence the course of the fever. This idea no longer controls the practice of *intelligent physicians* in malarious regions."

A distinguished teacher, Dr. Morehead, says:

"The practice, at one time too common, of administering calomel, in doses of four or five grains, three or four times in the course of the day, without any very definite object, and continuing it for a succession of days, cannot be too strongly condemned; not only is it unnecessary, but for the following reasons positively injurious.:

1. "In watching the progress of cases thus treated, it is not difficult to detect a train of symptoms fairly attributable to the treatment (calomel) than the disease, because it is in cases thus tested that it has been chiefly observed. The symptoms alluded to are uneasy feelings, sometimes amounting to pain with a sense of oppression or "sinking" at the epigastrium (stomach), and occasionally griping of the ab-

domen, for which leeches are not unfrequently applied and purgatives given.

2. "The frequent repetition of the calomel 'keeps up a furred state of the tongue,' with 'nausea' and 'irritability' of stomach, aggravates the febrile excitement and produces an irritable state of the bowels, indicated by frequent watery discharges.

3. "The convalescence of cases thus treated is always 'tedious,' and frequently complicated with diarrhœa and clay-colored discharges.

"Not only is the practice unsound in theory and of no value, but is contrary to rational theory and very injurious. If it be true that prostration of the vital actions and a deteriorated state of the blood are very unfavorable conditions in remittent fever, and that mercury deteriorates the blood and favors prostration, on what principle of reasoning can it be maintained that mercurial influences induced by the physician can have any other than an 'injurious effect in remittent fevers.'

"I have on several occasions pointed out the tendency of malarious fevers to produce a cachectic (broken down) state of the system, and have endavored to inculcate the importance of guarding against the increase of this unfavorable diathesis of medical treatment. To all who within the past twenty years have had an opportunity of extensively observing disease in India in the various classes of European society,—asthenia, dyspepsia, injured teeth, pains in side and loins, palpitation, habitually 'foul tongue,' constipated

bowels, pale alvine evacuations, depressed spirits and a sense of sinking at the epigastrium (stomach), all traceable to the abuse of mercury—must be familiar facts.

"Such, then, are the reasons drawn from my own sphere of observations, which have led me to the conclusion that the induction of mercurial influence in the treatment of malarial fevers has been a 'great and grievous error' in therapeutics."

I heartily endorse every word said by this distinguished physician, and can verify the facts by daily observation.

Dr. J, Forsythe Meigs says (in speaking of the use of mercury in malarial sickness):

"To say the least they (forms of mercury) are unnecessary, and any one who has seen the gastric distress, intestinal irritation, or the constitutional poisoning, which mercury not unfrequently iuduces, will be glad to know that he may, with a good conscience, dispense with its use in so severe and dangerous a disease as this of malarial fever often is."

Dr. Austin Flint, (one of the ablest physicians America has ever produced,) in his work on the practice, speaking of malarial fevers, says:

"There is no need of preparatory treatment. This position was taken by the author in an article published more than thirty years ago. An experience embracing many hundred cases, in different climates, since the date of that publication, has abundantly confirmed the correctness of this position."

Again he says: "The pathological views (nature of the disease) which formerly led practitioners to employ mercury freely in this disease, are not tenable, and it may fairly be doubted if clinical observation affords any ground for regarding this remedy specially indicated."

Again he says: "Time need not in any case be lost in order to resort to cathartics or other measures preparatory to the exhibition of an anti-periodic (quinine) remedy."

Headland, in his work on the action of medicine says:

"Mercury disintegrates or decomposes the blood and thus wastes the body." "This is the systematic action of mercury, on which too much stress cannot possibly be laid." "It is an agent of terrible activity, and we may well be cautious how we handle it." "When the skin cannot carry off the poison (mercury) in sufficient quantity—when the solvent powers of the urine is exhausted—when the bowels are prevented by opium from eliminating the mercury, then, as a last recourse, the salivary glands step in and in the saliva the metal finds an exit, (salivation)."

QUININE.

There can be no question but this is the remedy of all remedies in the treatment of all malarial fevers. It has stood the test for years and its use is no longer an experiment. It is the battle axe with which to do effective work in treating malaria in all its forms.

Dr. Flint says: "It is a specific, if any remedy is entitled to this appellation."

So much confidence have I in the remedy that when called to a patient in the first attack, I feel confident that he will not have another, if he takes the remedy freely.

How it acts on the poison in the system no one, so far, has been able to demonstrate, but that it will cut short the disease, there can be no question.

Really, malarial troubles are not, properly speaking, diseases, until after the poison has effected some change in the system. At first it is a poison that racks the whole body—every organ suffers, and the patien is in pain from head to feet; but, usually, as he is under the influence of quinine, all these symptoms vanish. The patient is some weaker, but in a short time will regain his health. But let the paroxysm return and continue—soon the constitution becomes surcharged with malaria, the spleen and liver enlarged, the blood weakened, and in addition to all this calomel in the bones; and what a picture!

People are slow to change preconceived opinions, and all reforms are gradual; but when reaction does come, it sweeps clean.

Sooner or later mercury will be banished from the list of remedies in malarial diseases. There is danger however, in extremes going too far, for mercury is a good remedy in certain cases, especially in inflammatory diseases, indeed, one of the best in pneumonia, acute rheumatism, etc., etc. When the patient is stout, and we wish to lower the vital powers, it is one of the best substitutes for blood letting. I mention this fact here, to show I have no prejudice against

the proper use of calomel. It is a remedy of force and power, and a good one when judiciously used; but I hold there is no necessity for it in the treatment of malarial fevers.

Bleeding is an old remedy, and a good one in some cases of pneumonia, or in fact any acute inflammations; but medicine has its fashion, and bleeding is now "one of the lost arts." It was formerly the custom to bleed in malarial fevers, but that practice has long since ceased.

Professor McLean says, "I have been led to take a view of malarial fevers generally, and remittent fevers in particular, different from that laid down by many authors.

"It appears to me that the so-called anti-phlogistic [calomel] treatment, so much insisted on by many writers, is based on the belief that the phenomena observed in a case of remittent fever are consequent on a process of inflammation. It is only on such a belief that anti-phlogistic treatment can be justified."

During the exacerbation of a remittent fever there is violent disturbance both of the vascular and nervous system. Almost every organ, almost every function suffers. The gastric intestinal membrane is affected, the liver and spleen suffer, the brain is involved, for rending headache and delirium are often present. Is it rational to suppose that an inflammatory process can be going on, at one and the same time, in all these various organs? Do the appearances observed *post mortem* (after death) give any support to such a doctrine?

If not, on what principle can spoliative treatment be justified? Is it not rather the case that this terrible disturbance of so many organs is due to the presence in the blood of a subtle poison acting on them all? If so, surely the guiding principle of the physician in his treatment should be to counteract this poison, to neutralize it, or to expel it from the system, and so prevent a recurrence of the exacerbations.

This is the principle on which I have long acted, and I am satisfied that it is at once a safe and successful one. In quinine we have such an antidote, a therapeutic agent of unrivaled efficacy, which, if skillfully used, will rarely disappoint the practitioner.

It is always, of course, advisable to have the bowels thoroughly evacuated, and if the patient is seen when the stomach is loaded (soon after a meal), it will be necessary to evacuate its contents by an emetic. In ardent remittents, however, there is generally little call for this, as obstinate vomiting is almost always a troublesome symptom.

This done, the period of remission must be watched for, and the moment it arrives quinine in a full dose should be given—not less than fifteen grains in the case of an adult.

If the irritability of the stomach be so urgent that the remedy is rejected, means must be adopted to allay it. Time, precious time, should not be lost. Quinine should be given by the rectum, in a full and efficient dose.

By mouth or by rectum, or by both, quinine in quantities sufficient to induce some of the symptoms of saturation (cin-

chonism) should be given before the time of expected exacerbation.

In closing these general remarks, I feel that if this book should cause a general inquiry in reference to the abuse of calomel in the treatment of malarial fevers, and a revolution in the treatment, as now generally adopted through this country, it will save the people much unnecessary suffering, and I will be repaid for my trouble in bringing the matter to their attention.

CONVULSIONS.

SYMPTOMS AND COURSE.

Children have spasms from a variety of causes, but I shall only describe the symptoms, course and treatment of convulsions occurring during an attack of either intermittent or remittent fever.

Some children, with large brains and a highly developed nervous system, will have spasms from very slight fever (102½), as it takes only a moderate amount of fever to make them very nervous and much excited.

Fever affects no two alike. While some children are drowsy, and will sleep during an attack of fever, others are wild, and often delirious.

By watching a case of fever, in a child, closely, an attack of spasm can usually be foretold.

Just before the spasm, the little patient usually becomes very nervous and highly excited; the least noise arousing from sleep, the child seems easily frightened, excited, scared, trembling, afraid something will happen to it, clinging close to the mother or nurse.

These symptoms, when the fever is high, should always be taken as a warning that the child will have a convulsion soon, if no remedy be given to prevent.

Sometimes, however, there is no warning symptom, the spasm coming on suddenly.

When the convulsion comes on, the child will usually cry out, and every muscle become contracted, the head drawn back, the eyeballs roll to one side, and seem fixed (staring), the jaws either locked or working rapidly, often biting the tongue, unless some substance (cork is best) is placed between the teeth to prevent. Consciousness is lost, the arms and legs drawn and violently jerking, the toes and fingers contracted, the angles of the mouth drawn to one side, the teeth grate, upon the lips often appears a white froth or foam.

The whole body is twitching by the spasmodic contractions of the muscles, and often, in severe cases, the back of head and feet are the only parts of the body that touch the bed.

This state of affairs (spasm) may only last a few minutes, or it may continue for hours, and the child die in the convulsion.

Usually, in a few minutes the paroxysm begins to sub-

side, the patient takes a deep inspiration and becomes quiet, and if not disturbed will fall into a sleep; but the fingers and toes are not relaxed. In such cases, usually the attack will soon return, with all the force and violence of the first.

The bowels and bladder are often evacuated unconsciously.

Convulsions occurring during fever, should always be regarded as serious; for while a large majority recover, yet every case should be treated energetically and promptly, and an effort made to prevent a return of the paroxysm.

It is easier to prevent a convulsion than to check one, consequently the warning should be closely watched for, *i. e.*, twitching of muscles, restlessness, excitement or rolling the eyeballs, etc., etc.

During the convulsive attack blood may be extravesated on the brain, and after the patient recovers from the fever and convulsion, paralysis result from this pressure.

I saw a case a short time since, (little girl of eight years,) who was unable to speak (talk) for three weeks after the recovery from the fever, because of blood pressing on the brain, producing paralysis of tongue. (She had convulsions during the attack of fever.) At first her articulation was poor, but soon recovered.

In another case, after a violent convulsion, the child lost all consciousness, and for three weeks lay in a stupid condition, ate and drank mechanically, just as food was given

her. She finally recovered, but partially paralyzed in one half her body.

Children do not always lose consciousness when they have a spasm, for although the body is jerking and muscles contracted, they seem to be aware of their condition, and will try to take any water, food or medicine given them during an attack.

There certainly can be no mistake as to a convulsion, the symptoms are usually so plainly marked, as so fully described before.

These convulsive attacks vary in intensity from slight jerking and twitching, with restlessness, without any loss of consciousness, to violent attacks, which toss the whole body about, drawing the face, fixing the eyes, contracting arms and legs, often causing death during the first convulsion. In fatal cases the respiration and circulation is embarrassed, and death takes place as a result of cerebral (brain) congestion. When the violent convulsive action (in such cases) cease, the little patient lies quiet, but it is often the sleep of death. The feet and legs become cold, and there is no return of consciousness—the whole system seems to succumb to the violence of the attack.

In other cases, the child has one convulsion after another at intervals, during which the stupor is gradually becoming more and more profound, the little one becoming unable to swallow or be aroused, till finally there is total loss of consciousness and sensation. This is the most frequent mode of death in convulsions.

Convulsions do not affect the whole body every time, but in some instances seem to be confined to one side of the body, or one arm and side of face; at other times the eyes and face, or the lower extremeties; yet this is rare. Usually the whole body is convulsed, and much contracted; but in the commencement of the attack, only one side may seem to be involved.

While I do not think there generally will be any difficulty in diagnosing convulsions, yet I will insert the graphic description of spasm by Dr. J. Lewis Smith. In describing the symptoms, he says:

"Eclampsia (spasm) is general or partial. If general, the muscles of the face, eyes, eyelids, and all the limbs are in a state of rigid involuntary contraction, alternating with relaxation. The features lose their natural expression, and are distorted; the mouth is drawn out of shape, often to one side, by the violent muscular action; the teeth are pressed together by tonic contraction of the muscles of jaws, and may be violently struck together, so as to lacerate the tongue, if it protrude, or are ground upon each other. Unless the attack is of short duration, frothy saliva, perhaps tinged with blood from the injured tongue, collects between the lips. The eyelids are usually open, though sometimes * * * they are closed. In severe cases, the eyes are turned up, so that the pupils are lost under the upper eyelids, or the muscles of the eyes are involved in the spasmodic movements, so that the eyeballs are forcibly drawn from side to side. Occasionally strabismus [squinting] oc-

curs. While the features are thus distorted, the head is forcibly retracted, or is turned to one side; the forearms are alternately pronated and supinated; the thumbs and fingers are convulsively flexed, so that the thumbs lie across the palms, and are covered by the fingers; the great toe is adducted, the other toes flexed; and the toes, as well as legs, participate more or less in the spasmodic movements.

"In general convulsions, consciousness is usually lost. The head is hot previous to, and during the attack, * * * and the face flushed. * * * The sphincters are relaxed during the convulsive attack, so that in many cases the urine and stool are passed involuntarily.

"Partial eclampsia (spasm) is more common than the general form, and it occurs in the muscles of the face, including those of the eye, of the face, and of one or both upper extremeties, or of the face and extremeties on one side. The spasmodic movements may be even limited to the muscles of the eyes, and they often occur only in these muscles and those of the face. Rarely, if ever, does eclampsia affect the legs, without affecting also the muscles of the arms and face. In partial convulsive attacks, sensation and consciousness are in some not entirely lost, but in others they are not manifested if present.

"The duration of an attack of eclampsia varies somewhat in different cases, from a few minutes to several hours. The average is not more than from five to fifteen minutes. It does not often continue longer than three or four hours in the severest cases. It is sometimes said to last a much

longer time, even for days, but there are in these cases intermissions. Violent attacks are usually short.

When the convulsion ends favorably, the spasmodic movements become less and less strong, and finally cease. The child then takes a deep inspiration, after which it lies quiet, and the respiration remains regular, or moderately accelerated. Some fully recover in a few minutes, if the eclampsia has been light and the fever not excessive."

TREATMENT OF SPASMS.

The old maxim "An ounce of prevention is worth a pound of cure," is certainly applicable to convulsions of children, occurring during an attack of malarial fever.

When there is any doubt whether the child is threatened with convulsions, it is the safest and best plan to give the little one the benefit of the doubt. Place (at once) the feet and legs in hot water and mustard (or put the child in a warm bath), apply cold water (not ice water) to head, and give a full dose of bromide potassa or a dose of bromidia.

If the child is very restless, much excited and nervous, give a full dose of bromide potassa and quinine, but if there is any jerking of muscles, it will be best to use bromidia, or chloral hydrate, with the bromide potassa and quinine.

Bromidia is composed of bromide potassa, chloral hydrate, hyoscyamus and Indian hemp. It is an excellent remedy, but one that requires some care in its administration, while the bromide of potassa alone is a simple remedy, and one

that is in very general use in this country as a domestic remedy for nervous headache, etc.

It is well to use the syringe with injections of warm water and soap, in order to unload the bowels. If no syringe is convenient, give a dose of castor oil or salts.

Unload the bowels, washing out all the fœcal matter,—this prepares the way for administering medicine by the rectum—provided it cannot be given by the mouth.

Anticipating the spasm, give a full dose of bromide potassa,—using injections of warm water and soap, in bowels, —placing the feet and legs in hot water and mustard,—cold applications to head.

Bromide potassa is a nerve sedative, and will do no harm. It is a good remedy to use in treating malarial fevers, as it prevents the quinine from causing nervousness and lessens the disagreeable roaring in ears, etc.

Should the convulsion occur, as it will often do, during the height of the fever, the same directions as above should be adopted, to-wit: place the patient in a warm bath, or the feet and legs in hot water and mustard, applying cold to the head; give bromide potassa, two grs. to a babe one year old, adding one grain for each year, and repeat every hour, if necessary to quiet; at the same time, if the stomach will tolerate it, give quinine, in dose of one grain to babe one year old, adding one-half grain for each year.

It is well to remember that quinine, in a full dose with

bromide potassa, will lessen the amount of fever, and always administer both when the stomach will tolerate it.

If unable to administer quinine by the mouth, inject in the rectum. A few drops of elixir vitriol will make a ready solution of quinine, and it will then pass through the syringe more readily.

Before injecting the quinine in the bowels, it is well to wash out all the fœcal matter first. This can be done by using a large injection of warm water and soap; after the patient has passed this, then dissolve the quinine in a small quantity of water, with the aid of one drop of elixir vitriol for each grain of quinine, and inject the same.

Washing out the lower bowels first with a large injection of warm water and soap, not only prepares the bowels to absorb the quinine, but draws the blood from the head, and in that manner may lessen the intensity of the spasm.

Care should be exercised, in attending the little one, to avoid all excitement; this, in many instances, is difficult to do, for the family and friends are always greatly alarmed, but if the remedies are intelligently administered some one must have a cool head to do it, or harm may result.

Among your domestic medicines it is well to have a mixture of bromide potassa or the crude salt. The usual solution or bromide is fifteen grains to the teaspoonful of water, which is the average dose for an adult. Also chloral hydrate, this keeps better in a well stoppered (glass) bottle. If kept in solution, fifteen grains to the teaspoonful of water

is the average dose for an adult. Also a bottle of quinine, and a lot of assorted sizes capsules. Capsules are the best and most frequent mode of administering quinine.

Bromidia can be used in lieu of chloral hydrate and bromide potassa. The dose of bromidia is one drop for an infant, increasing the dose one drop for each year, and repeat every hour, if necessary to relieve patient.

Generally there is no need of an emetic, as vomiting is frequently a distressing symptom of the fever cases; however, if the stomach is loaded with food, and no vomiting takes place, it would be well to produce vomiting sufficient to unload the same; this can be readily done by one teaspoonful of syrup ipecac to a young child, and repeat in one half an hour, if necessary.

RECAPITULATION.

1. If the spasm occur during the fever (or hot stage) of a chill and fever, or remittent fever, place the feet and legs in hot water and mustard, (one tablespoonful of ground mustard to bowl of hot water; apply cold water to the head; place a cork (or soft substance) between the teeth (if necessary to prevent injury to the tongue); give bromide potassa and quinine by the mouth; if not able to administer by the mouth, inject in the rectum. If spasms are severe add chloral hydrate or bromidia, either by the mouth or rectum.

Repeat the bromide potassa and chloral hydrate every

hour until the patient becomes quiet and the convulsions cease; at the same time give quinine by the rectum every hour, until the patient begins to sweat freely and the skin becomes cool.

In most cases the bromide potassa and quinine by mouth and rectum will soon lessen the amount of fever, and the convulsions cease, but if the spasms are severe with much jerking, it is always well to give chloral hydrate with the bromide potassa.

The following can be prepared and kept ready for use during the sickly season:

R Potassa Bromide,
Chloral Hydrate, a a grs, xxxii
Water, oz. ii
M

Dose (for a child one year old): one teaspoonful, repeated every hour until the spasm cease. The dose can be increased one-half (½) teaspoonful for each year. The contents of the bottle is the dose for an adult.

The dose of quinine is about one grain for a child one year of age, and increase one-half grain for each year. If injected into the bowels, double the dose, *i. e.* two grains for one year old babe, and about one-half grain for each additional year. A child two years old two and one-half grains (by injection); three years old three grains, and so on.

To an adult, with a high fever and severe headache, in-

ject in rectum fifteen to twenty grains. The dose should always be much larger by the rectum than by the mouth.

Remedies are often given hypodermically (under the skin) by physicians, but I do not think this safe in the hands of the people, consequently will not refer to it in this book. None but a physician should ever use a hypodermic syringe.

Chloroform is often used in relaxing and mitigating the convulsive movements, but it is not a safe remedy in the hands of non-professionals. If used at all, in no case should it be given after the convulsive movements cease, but inhaled *only during the spasm.* Fifteen to twenty drops on a pocket handkerchief and placed in about three or four inches of the nose; "never place against the nose or mouth, as the patient must have pure air with the chloroform."

Chloroform should always be given with great care, as it is a remedy of much power.

In convulsions of children with malarial fever there is seldom need of administering an emetic, as most of the cases are attended with obstinate vomiting.

When the child cannot retain the quinine by mouth or rectum, it will be well to apply to the skin. Mix one teaspoonful of quinine with a small portion of lard, or dissolve in whisky and apply to the chest and under the arms.

I have very little confidence in this manner of using quinine, but in some instances it will not be retained by mouth or rectum.

When the warm bath can be used, it is preferable to bath-

ing the feet and legs in hot water. The warm water has a soothing effect upon the nervous system; promoting muscular relaxation, and draws the blood from the head, etc. The warm bath (with cold water to head) can be repeated every two or three hours, as may be necessary.

If quinine is applied to the surface, just after each bath, will be the most appropriate time.

MALARIAL TOXÆMIA, MALARIAL CACHEXIA, CHRONIC MALARIAL POISONING, OR, CHRONIC CHILLS AND FEVER.

SYMPTOMS AND COURSE.

This condition is caused from repeated attacks of chills and fever, or remittent fever.

The patient is weak without energy, feels debilitated, his spleen and liver are enlarged, tongue coated white, and shows indentations (on sides) of teeth, no appetite, dyspeptic symptoms, bowels deranged, clay colored discharges, often diarrhœa, the skin is jaundiced and flabby.

There can be no mistaking these cases, they are familiar to most people in this country.

Often they have a chill and fever every other day, or they may have the fever without any decided chill.

These cases usually go the rounds, and are prescribed for by different physicians, really not treated by any one, or some may, and often do undertake their own case, relying on calomel and patent medicines, claiming that they can find no remedy to break the "ague."

Nothing is more appalling than to see these cases, whose systems are saturated with malarial poison, (broken down), and they continually adding mercurial poison, thus under-

mining nature's forces; mercury in such cases (malarial toxæmia), is an absolute poison—simply adding fuel to the fire.

These cases of malarial sickness, are no longer simply poisoned with malaria, but the malaria has produced organic changes in the blood, liver, spleen, stomach, kidneys, and indeed the whole system is deranged.

Parties thus afflicted often try every remedy they can hear or read of, buy patent medicines, and after a while conclude there is no virtue in medicine, for the cure of their chronic chills and fever; nothing relieves them, and often they become desponding.

Just such cases as these are liable to attacks of malarial hemorrhagic fever, and in some few cases dropsy develops.

While the abdomen in nearly all cases is enlarged, yet the outline of the enlarged liver and spleen can be very rarely felt.

The jaundiced and pale, flabby condition of the skin, in these cases of chronic chills and fever, shows the great destruction of the red corpuscles of the blood, and the increase of the white.

The destruction of red blood corpuscles do not take place equally in all parts of the body during an attack of malarial fever, but seem to spend its force principally in the liver and spleen. If the blood suffers in this manner, as a matter of course every organ in the body must.

Sternberg says :

"The most frequent result of repeated attacks of inter-

mittent, or the continued action of malaria not attended with febrile manifestations is that condition known as malarial cachexia (Toxæmia.) This is characterized by anæmia, feeble circulation, impaired digestion, debility and an enlarged spleen.

"In addition to this there is often enlargement and functional inactivity of the liver, dropsical effusions, mental torpor and in some cases albuminuria. The anæmia is often profound: the patient has a blanched appearance, the conjunctivæ (mucous membrane of the eye), have a pearly lustre, the lips are pallid, and the slightest exertion causes dyspnœa (short breath), and palpitation of the heart. Sometimes the skin has a bronzed or icteric (jaundiced) hue."

TREATMENT OF MALARIAL TOXÆMIA, OR CHRONIC CHILLS AND FEVER.

All remedies administered should be tonic in character; to build up the broken down system, is the grand object:

The blood is loaded with white corpuscles, when red should predominate; iron, in some form, is the best remedy for this. Pepsin and muriatic acid to assist in digesting the food.

The policy is to administer remedies to assist in digesting and in restoring to the system what is wanting: by which means we build up and strengthen the body.

Anti-malarial remedies alone will not accomplish the work in these cases. For the system is damaged by re-

peated attacks of malarial fevers, and we must restore the vital organs to health as well as rid the system of malaria. Organic changes have taken place in the liver, spleen, kidneys, and the blood is loaded with impure matter: to some extent every organ in the body is affected.

With a patient in this condition, is it possible by any plan of treatment to restore him to health?

Almost impossible to do so, and let the patient remain in the same atmosphere, the remedies administered will often be of no avail—unless the patient can be removed from the malarial place.

When the patient continues to reside in the malarious atmosphere (where he contracted the disease), it is almost impossible to cure him; we administer remedies during the day, and when night comes, his system takes on a fresh supply. His vital powers are at such a low ebb, he cannot resist the poison.

I have used the illustration of a man bitten by a snake, and the antidotes given, etc., he allowing the snake to bite him again and again, etc., etc, this applies here, for he is in just that condition, suffering from repeated attacks.

He may have taken anti-malarious remedies or not, but continues to reside in a malarious region, and is continually being poisoned with malaria; suppose he does take quinine to neutralize the malaria, and remains in the same locality' the struggle is kept up. Soon quinine will have no effect; these organic changes have taken place in the various or-

gans of the body, and the blood is loaded with effete matter, and is no longer good to sustain the system.

It is often difficult to convince these half dead people, that their systems are being poisoned with malaria—they will ascribe their chills to the enlarged liver or spleen; want something to cure the "ague cake."

If they should eat some article of food which disagrees with them, they can recognize this, but when we talk of malaria entering the system, and causing chills and fever, or remittent fever, they will not believe it. They usually want something to act on their livers and cure the spleen, and often resort to some patent liver regulator, or take calomel, which invariably does them more harm than good.

So by all means the first thing is to remove the patient from the malarious region. If he can afford it, send him to some healthy watering place. But usually these cases are among the very poorest class; but if only be moved five or six miles, will suffice in some instances. If living in the swamps go to the hills, or some high elevated place.

Take a tonic—the following will suffice; it being a combination of quinine and iron:

℞ Quinine Sulph., grs. lx.
Fowler's Solution, ʒ iss.
Liq : Oxide Iron, ʒ iii.
Water, q. s., ℥ iv.

M

Dose: (for an adult.) One teaspoonful three times a day (dilute) before meals and through a quill.

If the patient suffers with any dyspeptic symptoms, take the following :

℞ Pepsin, ℥ ss.
Acid Muriatic, (C. P.) ʒ ij.
Glycerine, ℥ i.
Water, q. s., ℥ iv.

M

Dose : (for an adult.) One teaspoonful just after eating.

The following is a cheap tonic and a very good one:

℞ Quinine Sulph., grs. xxx.
Tr. Iron, ℥ i.

M

Dose : (for an adult.) Thirty drops three times a day before meals, *dilute* and through a quill.

The patient should have a generous diet as he can afford: beef, eggs, milk, and a glass of wine after dinner, and fail not to practice bathing the body well, at least once a day, in tepid water, adding a teaspoonful of soda to the bath, rubbing the skin well, which opens the pores, and assists in carrying the poison out of the body.

Nitro-Muriatic Acid is a good tonic in these cases, after using the Iron tonic for some time; the dose (for an adult), five drops well diluted, three times a day.

After using the Iron tonic, or acid, till the appetite is fully restored, jaundice disappears. If any enlargement of the liver and spleen remains, use a mixture of

℞ Potassa Iodide, grs. xxx.
Syrup Iodide Iron, ℥ i.
M

Dose: (for an adult.) Fifteen drops three times a day, *dilute*, through a quill.

Using an ointment, well rubbed over the liver (of Bin-Iodide Mercury) once a day, or paint the surface with Tr. Iodine.

If the patient has any fever or chills, continue to give quinine freely, as recommended in the treatment of chills and fever. Dose, five grains every three or four hours, until he is thoroughly cinchonised, then give fifteen grains daily, after he misses the chill, for several days, using the iron tonic also.

All or most of the patent medicines placed on the market for the cure of chronic chills and fever, have quinine, or some of its alkaloids as their base.

Some advertise, "no quinine," and often it is true, but the nostrum is saturated with another extract of Peruvian bark—Cinchonidia, and really there is very little difference between sulp: quinine and sulp: Cinchonidia, so far as effect on malarial poison extends.

Quinine, in many cases, makes the patient more nervous, while cinchonidia produces a fullness in the head.

The author makes no war on the patent medicine men, for all of them, so far as he knows, are too smart to put any *calomel*, or any other form of mercury in their compounds—and this is a long step in the right direction. However, it

is to be hoped, that the Congress of the United States will some day pass a law forcing patent medicine men to print on the label their formula. At the same time they can be protected in their compounds, but if people will use patent medicines, let them know what they are taking.

Some may object to the arsenic in the tonic ℞ prescribed on another page, yet arsenic in the dose there given, is a good tonic in these chronic cases of malarial fever; while in large doses it is a well known poison. No fear need be entertained of its use, in the dose given, even though the tonic should be used for at least sixty days.

Usually in these cases diarrhœa is the rule, but if constipation exists, the same should be overcome by using cascara cordial, salts or imp. comp. cathartic pills, syrup rhubarb, etc. Use as little purgative medicine as possible; try and regulate the bowels by having a certain hour every day to attend to that duty, and when the hour arrives do not neglect it. There is nothing more conducive to good health than a regular condition of the bowels. They should act at least once every twenty-four hours. We cannot have good health without being regular in our habits.

If diarrhœa be present, use the pepsin recipe, with blackberry cordial or brandy, and, if necessary, give paregoric, etc.

The following is from a standard work on the practice of medicine (Aitken.) It confirms the position taken on this subject, and is in keeping with the views of the leading men in the profession:

"Chronic malarial toxæmia is best treated by a combina-

tion of the chlorides of iron, quinine and arsenic, diuretics, mild saline cathartics, * * * a nourishing mixed diet, including milk, meat, vegetables and fruits, * * * and change of climate. Great attention should be paid to the skin; frequent tepid baths should be taken, or the surface sponged daily * * * If there is derangement of the chylopoietic viscera (vessels and viscera which are connected with the formation of chyli) muriate of ammonia alone, or combined with chloride potassa and colchicum, should be given. * * *

"Under no circumstances should any preparation of mercury be permitted. * * *

"In the treatment of malarial toxæmia it is of first importance to keep the sluices of the system (the kidneys and intestinal canal) open, unless there are contra-indications; and this is best done by the frequent use of the mild saline cathartics before named.

"Chronic enlargement of the spleen frequently subsides as the toxic symptoms abate, and with the general improvement of health. The special treatment is by bromide of potassium and the application of iodine paint. * * * Also the officinal ointment of biniodide of mercury. A piece, the size of a nutmeg, is rubbed over the affected organ. * * * The patient is then directed to sit before the fire until there is a good deal of smarting; about half the quantity is again applied over the tender surface. Some blistering follows, which is to be dressed simply. The process is repeated in about three weeks, * * * "

RECAPITULATION.

1. One of the *most* important things (in the treatment of chronic chills) is to *remove* the patient, if possible, from the malarious atmosphere.

2. If having fever or chills, give a dose of purgative medicine, if bowels are constipated, Give quinine freely; dose (for an adult): five grains every three or four hours, until the chill or fever is checked, and the patient thoroughly chinconised, then continue the quinine in five grain doses three or four times a day.

3. Use the iron tonic as soon as the fever ceases. The tonic of liq. oxide iron, quinine and arsenic, is one of the best for chronic chills. If eye-lids become puffed from its use, discontinue the arsenic, and use the quinine and iron.

4. If bowels are irregular, try, as suggested, to have them act at least once every twenty-four hours. Use cascara cordial or salts for constipation. If any diarrhœa or dyspepsia, use the pepsin mixture.

5. After the system is rid of all malaria and the chills checked by the treatment, the liver and spleen should continue hard and enlarged, give the iodide potassa and iron recipe with the biniodide of mercury or iodine, externally, as directed, or use the bath of warm water, and soda, with nitro-muriatic acid, internally.

6. Give as good and rich a diet as the patient can afford, for good food makes rich blood.

PREVENTION OF MALARIAL FEVER.

At no time in the history of medicine has sanitary science attracted so much attention as now.

The question is, how to prevent disease? and certainly he is a more scientific and commendable physician that will protect his patients from disease, than one who merely cures them.

People are slow to act, and it is a hard struggle to convince the masses of the importance of hygiene measures. Often not until disease and death have done their fatal work among them, can a community see the error of their way.

As this book treats exclusively of malarial fevers, I will confine my paper strictly to the subject, *i. e.*, the "prevention of malarial fevers."

Again, it will be necessary to review at some length the cause of malaria, because we cannot understand how to avoid unless we become familiar with its abode, and how generated. Malaria undoubtedly arises from the earh, at night, as it is more intense near low, marshy places. Surgeon Chas. Smart, U. S. N., in Ref. Med. Sciences, says: "In temperate climates marshes, swamps, ditches and low grounds subject to overflow by rivers, lakes, ponds, etc., afford that conjunction of the factors that is most favorable for the evolution of the malarial influence. * *

"The malarial miasm is assumed to arise during the retrogression of organic matter to the inorganic state, under favorable conditions as to moisture and heat. When the moisture is in excess, as when the ground is wholly covered with water, there is no malaria. The rainy season in the tropics is not the sickly season, but its commencement is, when the showers are of short duration, and fall upon a dry and parched earth; and also its termination, when the earth remains soaked, and covered with a dying and decaying vegetation.

"Fever and ague prevail, not during the period of an inundation, but during the subsequent period of draining and drying up. * * * All grounds that are alternately submerged and exposed, are malarious.

"The artificial draining of ponds, and the accidental breaking of dams, have occasioned disease in their vicinity. * * * Shallow mill dams that uncover a portion of their storage during the use of the water, are more dangerous than those that have depth enough to keep the land submerged. * * *

"When a steady wind prevails during the sickly season, people living on the windward side may be unaffected, and even those to the leeward may be protected by the interposition of a strip of forest land. Malaria is diffused into the atmosphere with some difficulty.

"According to Watson, it loves the ground: 'In an unhealthy location it is more dangerous to sleep on the ground, or on the ground floor, than on the upper floor of a

house. It is often associated with watery vapor in the form of mists, or fogs, which hanging low over the exhalent surface, may be floated into neighboring valleys, and upward along the rising grounds.' Monfalcon put the distance to which malaria could be thus transported, at from fourteen hundred to sixteen hundred feet of elevation, and from six to ten hundred feet longitudinally Hertz says: 'We may admit the agency of the wind as a carrier of miasm for a short distance, but when it comes to stretches of many miles, it is no longer to be taken into account.' But the floating cloud of watery vapor and malaria is known to be intercepted by belts of trees. It was remarked by Pliny that 'trees destroy or consume the malarial vapors.' There are many instances on record where the planting of a belt of trees between a pestilent marsh and a settlement has protected the latter from disease; and conversely, where the removal of a screen of trees has been followed by an invasion of malaria from neighboring swamps. Not trees only, but all solid substances appear to attract the malarial poison. * * * Practically, malarial diseases may be regarded as non-contagious.

"Besides acting as a screen, trees are generally credited with exercising a beneficial influence in malarial localaties. * * *

"Drainage, however, which removes excess of moisture, increases salubrity, while promoting rather than interfering with the productive husbandry. Drainage has, therefore, from the most ancient times, been recognised as the chief

method of improving a malarious soil. Malarial fevers have been rendered a clinical curiosity in England by means of drainage and systematic cultivation. * * * It is to be noted, however, that the first efforts at improvement are almost invariably followed by an increased virulence and prevalence of the malarial influence, which subsides only after a period of continued cultivation.

"The history of agriculture, in this country, furnishes many illustrations of febrile outbreaks consequent on the drainage, clearing and upturning of the soil; but as these districts attain a high state of cultivation, they become progressively free from the paroxysmal fevers. * * * In fact, it may be said that any marked interference with the natural vegetation of a soil is likely to induce an endemic of malarial diseases, if the soil presents the concurrence of the three factors considered essential to the emanation of malaria, viz: heat, moisture and organic matter.

"The evolution of malaria is known by the experience of ages to be most active in warm climates and in warm seasons, hence the singularity of the fact that the warm period of the day corresponds in no locality with the greatest diurnal activity of the poisonous influence. On the contrary, it is well known that in temperate climates there is no danger on marshes that are notorious for their fevers, provided the individual be not exposed after night-fall; and in tropical climates, jungles and other pestilential regions may be penetrated with impunity when the sun is high in the heavens. It may be granted that the resisting power of

the individual is diminished during an exposure at night, particularly during sleep, and that the depressing influence of a chilly atmosphere may contribute to still further reduce the energy of the '*Vis conservatrix naturæ*.' * * * But notwithstanding these considerations, it appears singular that the period which should by analogy be that of greatest exhalation should be that of diminished manifestation. The known association of malaria with aqueous vapors suggests a coincidence in the exhalation of both from the soil; and as the absorption of the latter into the atmosphere is greatest during the heated period, it would seem that malarial developments should be corresponding prevalent and intense at that time. In explanation, it has been said that when the air becomes chilly, after sunset, the difference between its temperature and that of the soil, heated by the absorption of the sun's rays during the day, is at its maximum, as in consequence the ascensional tendency of the air immediately in contact with the soil, but radiation soon cools the soil to the point where the tendency is to deposition of watery vapor rather than to its evaporation, while the malarial influences continue as pernicious as when the ascensional force was greater. To explain this, it has been suggested that during the day the surface of the malarious soil becoming heated in the rays of the sun, evaporation takes place with rapidity, and the noxious exhalations carried upward by the ascensional tendency, are diluted and dissipated in the higher regions of the atmosphere. There are, therefore, no malarial developments in

the locality. At night, when the direct heat of the sun ceases to be felt, the soil speedily evolves its heat by radiation, the stratum of air in contact with it becomes colder than that overlying it, and such exhalations as issue from the soil are stayed in their upward course in the stagnant layers of cold and moist air which first receive them; hence, although emanation is more active during the day than at night, the state of condensation of the miasm is so much greater during the latter period, that pernicious effects are only then attributed to it.

"The utility of large fires in dissipating malaria, or in protecting from its evil consequences, has been long a settled belief. Hippocrates considered that protection was thus attained, and in modern times troops operating in unhealthy sections have resorted to this as an agreeable preventive measure.

"The generally accepted theory of malarial evolution calls for the concurrence of an organic soil, a certain degree of heat, and a certain proportion of moisture."

In the further discussion of this subject—prevention of malarial fevers—I will quote at some length from the works of Prof. Joseph Jones, of New Orleans, one of the best authorities on the subject of malaria, etc., etc.—a man who has spent a lifetime in the close study and investigation of the diseases of the South, and has given us a work that will remain long after he is dead, as a monument of a useful and well spent life. The labor expended by Dr. Jones is

immense, and every Southern physician should have a copy of his works. He says:

"No subject is of greater importance to the inhabitants of the tropical and temperate regions of the earth than the destruction or removal of the cause or causes of malaria. The following propositions should be considered in the discussion of the measures which may be proposed for the destruction or removal of causes of malaria:

First. "Malaria inflicts a vast amount of disease and suffering upon the human race, and directly and indirectly causes a considerable portion of the mortality in the tropics and temperate climates. The star of empire, which has been steadily passing from the east to the west, has halted in its progress in the great valley of the Mississippi, where it will remain as the center of political power, physical development and scientific advancement. In those regions in which the earth gives malaria, she also bestows her most bounteous gifts: golden grain, lucious fruits, and every variety of animal and vegetable food. Thus the baneful effects of malaria are counter-balanced, to a large extent, by the mild and genial climate, and the bounteous products of field and forest, river, lake and ocean."

Second. "The labors of man in clearing the forest, opening and deepening the channels of rivers, draining and tilling the land, have altered the climate and changed the character of the diseases of large portions of the earth's surface. The malarious belt of the earth has been thus progressively circumscribed by the labors of the agricul-

turist. In the present century the removal of the causes of malarial fevers has been greatly facilitated by extensive introduction of improved implements and machinery, and the use of steam. The drainage of lagoons, swamps and marshes, as well as the land generally, has removed certain conditions favorable to the development of simple constructed organisms and morbific ferments. With the increase of the human race and the advancement of agriculture and the mechanical arts, there will be a progressive diminution of the empire of malaria." * * *

Third. "Centuries must elapse before the low grounds, marshes, ponds, lagoons and swamps of the United States of America, and more especially of the great valley of the Mississippi, will be thoroughly drained and under cultivation."

Fourth. "Substitute cistern water for well or spring water."

There can be no doubt that many cases of malarial fevers are caused from the drinking of water from shallow wells, springs, or cisterns that leak. Look well to the supply of water used for drinking purposes.

Fifth. "Never commence work upon an empty stomach." "Avoid as far as possible, the dews of the morning and nights."

"Avoid wet clothes as far as possible."

In reference to building houses, care should be exercised in selecting the location.

In this State (Texas), it is well to always build on the

south side of the river, lake or low marshy places, as the gulf breeze which is always from the south, will carry the malaria away from the residence.

The question is often asked why does Mr. A's family escape fevers, while B's, living in the same neighborhood, is always sick? Many times it can be accounted for in the location of the residence. One on the north, and one on the south of a malarious place, or it may be one has a screen of timber intervening.

Many farmers in this country build their tenant houses in the fields and cultivate the land close to the building. This is wrong. Cotton is an unhealthy plant; especially is this true, if it has been attacked by worms, or has shed the leaves freely. Chills and fevers will certainly attack any one who resides in a cotton field, when this is the case. Heat, moisture and vegetable decomposition are there, and these are all that is necessary to produce malaria.

Allowing weeds and rank vegetation to grow in close proximity to the building, cutting the same down and permitting it to decay, will cause malaria. If cut, it should be destroyed by fire.

Two-story houses are much better than the low buildings, if the upper story be occupied at night, for the poison hovers near the ground, as has been shown. When the weather will permit, close the doors and windows after 10 p. m., but often in this country the weather is so hot that we cannot bear the placing of ourselves in a hot box by closing the

doors and windows at night. Nor is this advisable when several persons occupy the same room.

As a preventive, quinine is the best of all known drugs. I do not think whisky or strong drink is of any benefit, as many seem to think in this country. There is certainly more virtue in ten grains of quinine than in one gallon of whisky to prevent an attack of malarial fever.

There is no doubt in the minds of the very best authorities in this country as to the power of qunine to ward off an attack of malaria. One says : "Of the prophylactic virtues of quinine against malarial impressions, it may be asserted with confidence that, fortified with this wonderful drug, none need fear venturing at any time into the heart of our hostile low-lands in summer, inhaling with impunity its deadly miasma."

I am inclined to think this language is too strong, yet there is much truth in it, for quinine is the great anti-malarial drug. Let the system be kept under its influence while in a malarial region.

When possible, have a screen of green timber between the dwelling and the place supposed to be malarious, and by no means allow the same destroyed.

Often I have known a healthy place made malarious by the cutting away of a skirt of timber between the house and the swamp.

In this country, on the prairies, I do not think it well to have too many shade trees in close proximity to the house ;

they keep the ground too damp and are always full of mosquitoes.

Occassionally burning the trash and refuse about the place prevents malaria as well as other sickness, as the fires not only destroy the garbage, trash, etc., but purify the air.

RECAPITULATION.

1. We must build our houses, when possible, on the south side of these creeks, ponds and malarious places, and on as high an elevation as can be secured. They should be far enough above the ground to admit the air to pass freely under them. When the party building can bear the expense, an upper story should always be added, and occupied as a sleeping appartment during the time that malaria prevails.

2. Avoid building in the fields where the house will be surrounded by rank vegetation, and the land cultivated in close proximity to same.

3. If possible keep a screen of green timber between the house and the low malarial places, and if no forest exists, it will pay to plant trees.

4. When the weather will permit, close the windows and doors after 10 p. m.

5. Avoid sleeping in the night air or exposing the person early in the morning dews, etc.

6. Use pure cistern water when possible, which should by all means be caught during the winter. It seems it will be many years before the people of this State will learn the

value of good and pure water, and how essential it is to health. Often they find water so full of chemicals and so bad that an animal will not drink it; they build a hotel and establish a health resort, advertising the wonderful properties of the springs or wells.

7. Take from three to five grs. of quinine at least once a day, and if any lassitude, aching of bones, excitement of pulse, with flashes of heat, are felt, take three grs. three or four times a day. "An ounce of prevention is worth a pound of cure,"—ten grs. of quinine is better to ward off an attack than thirty grs. given to cure. If the bowels are constipated, take salts or cascara cordial to act on same.

8. Occasionally have the yard and premises cleaned and all the trash and filth burned, and do not forget that an occasional bath is necessary to make the skin act well, for it has been well said that "Cleanliness is next to godliness."

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